

# **North Fork Grindstone Creek (1010)**

## **Use Attainability Analysis**



**Boone County Regional Sewer District  
1314 North 7<sup>th</sup> Street  
Columbia, MO 65201-3902**

**Prepared by  
Barr Engineering Company  
July 2005**

***North Fork Grindstone Creek (1010)***

***Use Attainability Analysis***

***Boone County Regional Sewer District***

***1314 North 7<sup>th</sup> Street***

***Columbia, MO 65201-3902***

***July 2005***



Barr Engineering Company  
3236 Emerald Lane  
Jefferson City, MO 65109  
Phone: (573) 636-5331  
Fax: (573) 636-5323

**Field Data Sheets for Recreational Use Stream Surveys**

RECEIVED

JUL 13 2005

**Data Sheet A - Water Body Identification**

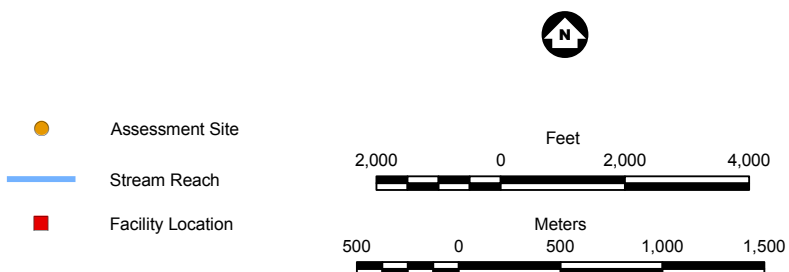
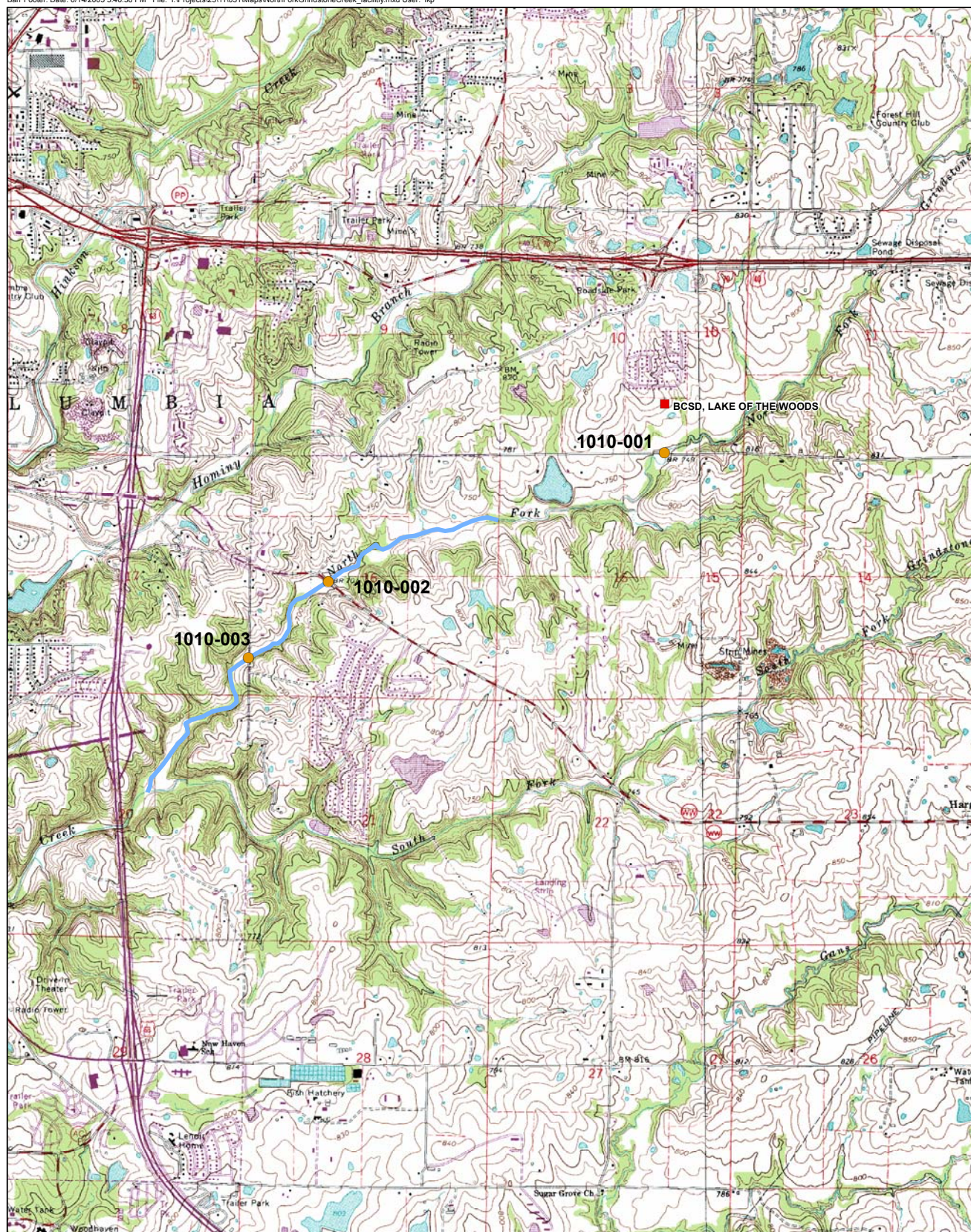
WATER PROTECTION PROGRAM

Water Body Name (from USGS 7.5' quad): North Fork Grindstone Creek
8-digit HUC: 10300102
Missouri WBID #: 1010
County: Boone
Upstream Legal Description: East Line Section 16, T48N, R12W
Downstream Legal Description: Confluence with South Fork Grindstone Creek (located in NE 1/4 Section 20, T48N, R12W)
Upstream Coordinates: UTM (Z15N) 563674E; 4310695N
Downstream Coordinates: UTM (Z15N) 561357E; 4308906N
Discharger Facility Name(s): BCSD, Lake of the Woods, Permit # MO0034444
Discharger Permit Number(s): See Above.
Number of Sites Evaluated: 3
Name of Surveyor and Telephone Number: Alan Fandrey (573-638-5013)
Organization: Barr Engineering Company
Position: Civil Engineer

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Alan Fandrey Date: 7-1-05





**Figure 1**

NORTH FORK  
GRINDSTONE CREEK REACH



## **Field Data Sheets for Recreational Use Stream Surveys**

### **Data Sheet B - Site Characterization**

(A separate data sheet must be completed for each site)

Missouri WBID #: 1010-001		Site Location Description: North Fork Grindstone Creek at road crossing on north line Section 15, T48N, R13W - Boone County	
Site GPS Coordinates: 564758E; 4311131N			
Date & Time: 06/26/05; 2 p.m.		Facility Name: BCRSD - Lake of the Woods	
Personnel: Alan J. Fandrey		Permit Number: MO00034444	
Current Weather Conditions: Clear - 90s		Weather Conditions for Past 7 days: Last rain June 13	
Photo Ids: Upstream: 1US1 & 1US2	Downstream: 1DS1& 1DS2	Other:	

#### **Uses Observed\*:**

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (include number of individuals recreating, frequency of use, photo-documentation of evidence of recreational uses, etc.)				

#### **Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input checked="" type="checkbox"/> Other: Agriculture suburban	

#### **Evidence of Human Use\*:**

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input type="checkbox"/> Other:				

**Site Locations Map(s):** Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

\*Some of this information is not intended to directly influence a decision on any one particular recreational use analysis but may point to conditions that need further analysis or that effect another use.

# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B - Site Characterization

Page Two – WBID #1010-001:

### Stream Morphology:

#### Upstream View Physical Dimensions:

<input type="checkbox"/> Riffle	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input type="checkbox"/> Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input checked="" type="checkbox"/> Pool	Width (ft): 20-40	Length (ft): 100	Avg. Depth (ft): 1.4	Max. Depth (ft): 2.1
<input checked="" type="checkbox"/> Flow	Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estimated (ft <sup>3</sup> /sec): < 0.1		

#### Downstream View Physical Dimensions:

<input checked="" type="checkbox"/> Riffle	Width (ft): 3	Length (ft): 15	Avg. Depth (ft): 0.1	Max. Depth (ft): 0.2
<input type="checkbox"/> Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input checked="" type="checkbox"/> Pool	Width (ft): 25	Length (ft): 50	Avg. Depth (ft): 1.2	Max. Depth (ft): 1.6
<input checked="" type="checkbox"/> Flow	Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estimated (ft <sup>3</sup> /sec): see above		

### Substrate\*: (These values should add up to 100%.)

20% Cobble	% Gravel	% Sand	% Silt	80% Mud/Clay	% Bedrock
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### Aquatic Vegetation\*: (note amount of vegetation or algal growth at the assessment site)

Algae on surface.

### Water Characteristics\*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: brown
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: construction debris
Surface Deposit:	<input type="checkbox"/> Oil	<input checked="" type="checkbox"/> Scum	<input checked="" type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach additional comments (including information from interviews) to this form.  
Pool depth likely due to scour at bridge.

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Alan Fandrey Date: 7-06-05  
Organization: BEC Position: Eng



Photo ID 1010-001US1: Upstream (North Fork Grindstone Creek)



Photo ID 1010-001US2: Upstream (North Fork Grindstone Creek)



Photo ID 1010-001DS1: Downstream (North Fork Grindstone Creek)



Photo ID 1010-001DS2: Downstream (North Fork Grindstone Creek)



## **Field Data Sheets for Recreational Use Stream Surveys**

### **Data Sheet B - Site Characterization**

(A separate data sheet must be completed for each site)

Missouri WBID #: 1010-002	Site Location Description: North Fork Grindstone Creek at Highway WW crossing in West 1/2 Section 16, T48N, R12W; BID 10 - Boone County	
Site GPS Coordinates: 562486E; 4310298N		
Date & Time: 5/25/05 - 4 p.m..	Facility Name: BCRSD - Lake of the Woods	
Personnel: Tim J. Fandrey	Permit Number: MO0034444	
Current Weather Conditions: Partly Cloudy - 70s	Weather Conditions for Past 7 days: Last rain on May 22	
Photo Ids: Upstream: 2US1 & 2US2	Downstream: 2DS1 & 2DS2	Other: 1010-002O1

#### **Uses Observed\*:**

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (include number of individuals recreating, frequency of use, photo-documentation of evidence of recreational uses, etc.)				

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:	

#### **Evidence of Human Use\*:**

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input type="checkbox"/> Other:				

**Site Locations Map(s):** Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

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# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B - Site Characterization

Page Two – WBID #1010-002:

### Stream Morphology:

#### Upstream View Physical Dimensions:

<input checked="" type="checkbox"/> Riffle	Width (ft): 5.0	Length (ft): 10	Avg. Depth (ft): 0.2	Max. Depth (ft): 0.3
<input type="checkbox"/> Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input type="checkbox"/> Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input checked="" type="checkbox"/> Flow	Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estimated (ft <sup>3</sup> /sec): see below		

#### Downstream View Physical Dimensions:

<input type="checkbox"/> Riffle	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input checked="" type="checkbox"/> Run	Width (ft): 2.0	Length (ft): 21	Avg. Depth (ft): 0.2	Max. Depth (ft): 0.25
<input checked="" type="checkbox"/> Pool	Width (ft): 5.0	Length (ft): 12	Avg. Depth (ft): 0.8	Max. Depth (ft): 1.6
<input checked="" type="checkbox"/> Flow	Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estimated (ft <sup>3</sup> /sec): less than 5		

### Substrate\*: (These values should add up to 100%.)

40% Cobble	40% Gravel	10% Sand	% Silt	% Mud/Clay	10% Bedrock
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### Aquatic Vegetation\*: (note amount of vegetation or algal growth at the assessment site)

Vegetation on rocks.
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### Water Characteristics\*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input checked="" type="checkbox"/> Foam	<input type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach additional comments (including information from interviews) to this form.

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Alan Fandrey Date: 7-05-05  
Organization: BEC Position: Eng.



Photo ID 1010-002US1: Upstream (North Fork Grindstone Creek)



Photo ID 1010-002US2: Upstream (North Fork Grindstone Creek)





Photo ID 1010-002DS1: Downstream (North Fork Grindstone Creek)



Photo ID 1010-002DS2: Downstream (North Fork Grindstone Creek)



Photo ID 1010-00201: (North Fork Grindstone Creek)

## **Field Data Sheets for Recreational Use Stream Surveys**

### **Data Sheet B - Site Characterization**

(A separate data sheet must be completed for each site)

Missouri WBID #: 1010-003		Site Location Description: North Fork Grindstone Creek at road crossing at east line Section 12, T48N, R12W; BID 11 - Boone County
Site GPS Coordinates: 562006E; 4309787N		
Date & Time: 5/25/05 - 4:30 p.m.		Facility Name: BCRSD - Lake of the Woods
Personnel: Tim J. Fandrey		Permit Number: MO0034444
Current Weather Conditions: Partly Cloudy - 70s		Weather Conditions for Past 7 days: Last rain on May 22
Photo Ids: Upstream: 1010-003US	Downstream: 1010-003DS	Other:

#### **Uses Observed\*:**

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (include number of individuals recreating, frequency of use, photo-documentation of evidence of recreational uses, etc.)				

**Surrounding Conditions\*:** (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> Other:	

#### **Evidence of Human Use\*:**

<input checked="" type="checkbox"/> Roads	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Rope swings	<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle
<input type="checkbox"/> Other:				

**Site Locations Map(s):** Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest. (Include photographs)

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# Field Data Sheets for Recreational Use Stream Surveys

## Data Sheet B - Site Characterization

Page Two - WBID #1010-003:

### Stream Morphology:

#### Upstream View Physical Dimensions:

<input type="checkbox"/> Riffle	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input type="checkbox"/> Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input checked="" type="checkbox"/> Pool	Width (ft): 5.0	Length (ft): 11	Avg. Depth (ft): 0.6	Max. Depth (ft): 0.7
<input checked="" type="checkbox"/> Flow	Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estimated (ft <sup>3</sup> /sec): < 5	

#### Downstream View Physical Dimensions:

<input checked="" type="checkbox"/> Riffle	Width (ft): 3.0	Length (ft): 8.0	Avg. Depth (ft): 0.2	Max. Depth (ft): 0.25
<input type="checkbox"/> Run	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input type="checkbox"/> Pool	Width (ft):	Length (ft):	Avg. Depth (ft):	Max. Depth (ft):
<input checked="" type="checkbox"/> Flow	Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Estimated (ft <sup>3</sup> /sec): same as above	

#### Substrate\*: (These values should add up to 100%.)

20% Cobble	% Gravel	10% Sand	% Silt	15% Mud/Clay	55% Bedrock
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#### Aquatic Vegetation\*: (note amount of vegetation or algal growth at the assessment site)

Vegetation on rocks.

#### Water Characteristics\*: (Mark all that apply.)

Odor:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Color:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
Bottom Deposit:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
Surface Deposit:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

**Comments:** Please attach additional comments (including information from interviews) to this form.

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**I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.**

Signed: Alan Handrup Date: 7-1-05  
Organization: BEC Position: EMV



Photo ID 1010-003US: Upstream (North Fork Grindstone Creek)



Photo ID 1010-003DS: Downstream (North Fork Grindstone Creek)